

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/16/2010 has been entered.

Examiner's Amendment

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Stephen Kopchik (Reg. Num. 61,215) on 9/15/2010.

The examiner has amended the claims as follows:

1. (Currently Amended) An image processing device comprising:
 - a processing degree setting unit that sets a target degree for color processing with regard to at least two properties of a plurality of properties of an image signal, as a single target processing degree;
 - a processing coefficient group creation unit that creates a processing coefficient group for performing color processing of the single target processing degree, based on the single target processing degree set by the processing degree setting unit and a plurality of base coefficient groups that perform the color processing of the single target processing degree to differing degrees, wherein the plurality of base coefficient groups are created in advance; and

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a color processing execution unit that performs the color processing of the single target processing degree with respect to the image signal using the processing coefficient group created by the processing coefficient group creation unit,

wherein the color processing of the single target processing degree is memory color correction,

wherein the plurality of base coefficient groups do not change with respect to the image signal,

wherein the plurality of base coefficient groups have conversion characteristics such that a point in a color space according to the image signal after the memory color correction is in a predetermined region in the color space, and

wherein the processing degree setting unit sets: a default value for the single target processing degree, the default value being a value not at an edge of the predetermined region in the color space; a first boundary value, which is an upper limit value for the single target processing degree; and a secondary boundary value, which is a lower limit value for the single target processing degree,

wherein the processing coefficient group creation unit creates: a default processing coefficient group corresponding to the default value; a first processing coefficient group corresponding to the first boundary value; and a second processing coefficient group corresponding to the second boundary value,

wherein, in a case when the single target processing degree is a value in a range between the default value of the single target processing degree and the first boundary value, the processing coefficient group creation unit creates the processing coefficient group for performing the memory color correction by interpolating the default processing coefficient group and the first processing coefficient group based on the single target processing degree, and

wherein, in a case when the single target processing degree is a value in a range between the default value of the target degree and the second boundary value, the processing coefficient group creation unit creates the processing coefficient group for performing the memory color correction by interpolating the default processing coefficient group and the second processing coefficient group based on the single target processing degree.

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2. (Previously Presented) The image processing device according to claim 1,
wherein the processing coefficient group creation unit creates the processing coefficient group by interpolating or extrapolating the plurality of base coefficient groups based on the single target processing degree.

3. (Original) The image processing device according to claim 1,
wherein the plurality of properties include a hue, a vividness, and a brightness of the image signal.

4. (Cancelled)

5. (Previously Presented) The image processing device according to claim 1,
wherein the processing degree setting unit sets a correction trend of the memory color correction as the single target processing degree, and
wherein the processing coefficient group creation unit creates the processing coefficient group by interpolating or extrapolating the plurality of base coefficient groups that perform the memory color correction with different correction trends based on the single target processing degree.

6. (Previously Presented) The image processing device according to claim 1,
wherein the processing degree setting unit sets a correction strength of the memory color correction as the single target processing degree, and
wherein the processing coefficient group creation unit creates the processing coefficient group by interpolating or extrapolating a base coefficient group that performs the memory color correction of a predetermined correction strength and a base coefficient group with which the memory color correction is not performed, based on the single target processing degree.

7. (Previously Presented) The image processing device according to claim 1,
wherein the plurality of base coefficient groups are a plurality of base matrix data whose size corresponds to the number of the plurality of properties of the image signal, and

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wherein the color processing execution unit performs a matrix computation on the image signal using processing matrix data created by the processing coefficient group creation unit.

8. (Previously Presented) The image processing device according to claim 7,

wherein the processing coefficient group creation unit creates the processing matrix data by interpolating or extrapolating the plurality of base matrix data based on the single target processing degree.

9. (Previously Presented) The image processing device according to claim 1,

wherein the plurality of base coefficient groups are a plurality of base lookup tables that store values corresponding to the values of the image signal after a previous memory color correction has been performed, and

wherein the color processing execution unit performs the memory color correction on the image signal using a processing lookup table created by the processing coefficient group creation unit.

10. (Previously Presented) The image processing device according to claim 9,

wherein the processing coefficient group creation unit creates the processing lookup table by interpolating or extrapolating the plurality of base lookup tables based on the single target processing degree.

11. (Previously Presented) The image processing device according to claim 1,

wherein the processing degree setting unit includes: a first processing degree setting unit that sets a first target processing degree, which is a target for a correction trend of the memory color correction; and a second processing degree setting unit that sets a second target processing degree, which is a target for a correction strength of the memory color correction, and

wherein the processing coefficient group creation unit creates the processing coefficient group by interpolating or extrapolating the plurality of base coefficient groups that perform the memory color correction at different correction trends, based on the first processing degree and the second processing degree.

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12. (Previously Presented) The image processing device according to claim 1,
wherein the processing coefficient group creation unit creates the processing coefficient group by changing only a specific section of the plurality of base coefficient groups.

13. (Previously Presented) The image processing device according to claim 12,
wherein the specific section of the plurality of base coefficient groups is a section that is determined by the processing degree setting unit.

14. (Previously Presented) The image processing device according to claim 12,
wherein the specific section of the plurality of base coefficient groups is a section of the plurality of base coefficient groups that gives a transformation coefficient for a predetermined memory color.

15 - 17. (Cancelled)

18. (Currently Amended) An image processing method comprising the steps of:
(a) setting, using a processor, a target degree for color processing with regard to at least two properties of a plurality of properties of an image signal, as a single target processing degree;
(b) creating a processing coefficient group that performs color processing of the single target processing degree, based on the single target processing degree that is set in the step (a) and a plurality of base coefficient groups that perform the color processing of the single target processing degree to differing degrees, wherein the plurality of base coefficient groups are created in advance; and
(c) performing the color processing of the single target processing degree with respect to the image signal using the processing coefficient group that is created in the step (b),
wherein the color processing of the single target processing degree is memory color correction,

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wherein the plurality of base coefficient groups do not change with respect to the image signal,

wherein the plurality of base coefficient groups have conversion characteristics such that a point in a color space according to the image signal after the memory color correction is in a predetermined region in the color space, and

wherein the setting the target degree for color processing includes setting: a default value for the single target processing degree, the default value being a value not at an edge of the predetermined region in the color space; a first boundary value, which is an upper limit value for the single target processing degree; and a secondary boundary value, which is a lower limit value for the single target processing degree,

wherein the creating the processing coefficient group that performs color processing of the single target processing degree includes creating: a default processing coefficient group corresponding to the default value; a first processing coefficient group corresponding to the first boundary value; and a second processing coefficient group corresponding to the second boundary value,

wherein, in a case when the single target processing degree is a value in a range between the default value of the single target processing degree and the first boundary value, the processing coefficient group for performing the memory color correction is created by interpolating the default processing coefficient group and the first processing coefficient group based on the single target processing degree, and

wherein, in a case when the single target processing degree is a value in a range between the default value of the target degree and the second boundary value, the processing coefficient group for performing the memory color correction is created by interpolating the default processing coefficient group and the second processing coefficient group based on the single target processing degree.

19. (Currently Amended) A non-transitory computer-readable storage medium having stored thereon an image processing program that performs color processing of an image signal through

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a computer, wherein when executed, the image processing program causes the computer to perform an image processing method comprising the steps of:

(a) setting, using a processor, a target degree for the color processing with regard to at least two properties of a plurality of properties of the image signal, as a single target processing degree;

(b) creating a processing coefficient group that performs color processing of the single target processing degree, based on the single target processing degree set in the step (a) and a plurality of base coefficient groups that perform the color processing of the single target processing degree to differing degrees, the plurality of base coefficient groups being created in advance; and

(c) performing the color processing of the single target processing degree with respect to the image signal using the processing coefficient group created in the step (b),

wherein the color processing of the single target processing degree is memory color correction, and

wherein the plurality of base coefficient groups do not change with respect to the image signal,

wherein the plurality of base coefficient groups have conversion characteristics such that a point in a color space according to the image signal after the memory color correction is in a predetermined region in the color space, and

wherein the setting the target degree for color processing includes setting: a default value for the single target processing degree, the default value being a value not at an edge of the predetermined region in the color space; a first boundary value, which is an upper limit value for the single target processing degree; and a secondary boundary value, which is a lower limit value for the single target processing degree,

wherein the creating the processing coefficient group that performs color processing of the single target processing degree includes creating: a default processing coefficient group corresponding to the default value; a first processing coefficient group corresponding to the first boundary value; and a second processing coefficient group corresponding to the second boundary value,

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wherein, in a case when the single target processing degree is a value in a range between the default value of the single target processing degree and the first boundary value, the processing coefficient group for performing the memory color correction is created by interpolating the default processing coefficient group and the first processing coefficient group based on the single target processing degree, and

wherein, in a case when the single target processing degree is a value in a range between the default value of the target degree and the second boundary value, the processing coefficient group for performing the memory color correction is created by interpolating the default processing coefficient group and the second processing coefficient group based on the single target processing degree.

20. (Currently Amended) An integrated circuit device comprising:

a processing degree setting portion that sets a target degree for color processing with regard to at least two properties of a plurality of properties of an image signal, as a single target processing degree;

a processing coefficient group creation portion that creates a processing coefficient group for performing color processing of the single target processing degree, based on the single target processing degree set by the processing degree setting portion and a plurality of base coefficient groups that perform the color processing of the single target processing degree to differing degrees, wherein the plurality of coefficient groups are created in advance; and

a color processing execution portion that performs color processing of the single target processing degree with respect to the image signal using the processing coefficient group created by the processing coefficient group creation portion,

wherein the color processing of the single target processing degree is memory color correction, and

wherein the plurality of base coefficient groups do not change with respect to the image signal,

wherein the plurality of base coefficient groups have conversion characteristics such that a point in a color space according to the image signal after the memory color correction is in a predetermined region in the color space, and

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wherein the processing degree setting portion sets: a default value for the single target processing degree; a first boundary value, the default value being a value not at an edge of the predetermined region in the color space, which is an upper limit value for the single target processing degree; and a secondary boundary value, which is a lower limit value for the single target processing degree,

wherein the processing coefficient group creation portion creates: a default processing coefficient group corresponding to the default value; a first processing coefficient group corresponding to the first boundary value; and a second processing coefficient group corresponding to the second boundary value,

wherein, in a case when the single target processing degree is a value in a range between the default value of the single target processing degree and the first boundary value, the processing coefficient group creation portion creates the processing coefficient group for performing the memory color correction by interpolating the default processing coefficient group and the first processing coefficient group based on the single target processing degree, and

wherein, in a case when the single target processing degree is a value in a range between the default value of the target degree and the second boundary value, the processing coefficient group creation portion creates the processing coefficient group for performing the memory color correction by interpolating the default processing coefficient group and the second processing coefficient group based on the single target processing degree.

21 - 24. (Cancelled)

Allowable Subject Matter

2. Claims 1-3, 5-14, and 18-20 are allowed. The following is an examiner's statement of reasons for allowance. The prior art fails to teach the listed claims each of which specifically comprises the following listed feature(s) in combination with other limitations in the respective claims:

-- wherein the setting the target degree for color processing includes setting: a default value for the single target processing degree, the default value being a value not at an edge of the

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predetermined region in the color space; a first boundary value, which is an upper limit value for the single target processing degree; and a secondary boundary value, which is a lower limit value for the single target processing degree, wherein the creating the processing coefficient group that performs color processing of the single target processing degree includes creating: a default processing coefficient group corresponding to the default value; a first processing coefficient group corresponding to the first boundary value; and a second processing coefficient group corresponding to the second boundary value, wherein, in a case when the single target processing degree is a value in a range between the default value of the single target processing degree and the first boundary value, the processing coefficient group for performing the memory color correction is created by interpolating the default processing coefficient group and the first processing coefficient group based on the single target processing degree, and wherein, in a case when the single target processing degree is a value in a range between the default value of the target degree and the second boundary value, the processing coefficient group for performing the memory color correction is created by interpolating the default processing coefficient group and the second processing coefficient group based on the single target processing degree.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YUZHEN GE whose telephone number is (571)272-7636. The examiner can normally be reached on 7:30am-4:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Yuzhen Ge/
Primary Examiner, Art Unit 2624